

REMARKS

The undersigned wishes to thank the examiner for his time and courtesy in the interview of February 23, 2005. At the interview the three arguments, as set forth in a proposed response faxed to the examiner in advance, were each discussed in turn.

The first argument, as outlined in more detail below, is to the effect that even if the teachings of Mori et al were to be combined with those of Japanese Kokai 6-20601, the modified product would not be within the scope of applicants' claims or suggestive of applicants' claimed subject matter because of the distinction between applicants' heat reactive acrylic copolymer, defined by claim 1 having a molecular weight of 50,000 - 2,000,000 (100,000 - 1,000,000 in claim 13), and the oligomers and prepolymers disclosed by Mori et al. The undersigned noted definitions of "oligomer" in the attached Chemical Dictionary citations (Attachments 3 and 4) and the teaching at column 3, lines 11-15 of U.S. 4,608,400 (Attachment 7) to the effect that the upper limit for average molecular weight of a polyurethane acrylate prepolymer would be about 10,000. The examiner responded to the effect that he would do a further search to evaluate the molecular weight as recited by claims 1 and 13 as serving to distinguish the heat-reactive copolymers of the present invention from the oligomers and prepolymers of Mori et al.

In a second argument, it was proposed to further amend claim 1 to define the heat-reactive resin (acrylic copolymer) as “being formed by radical polymerization” and, therefore, as having free hydroxyl groups. In view of the examiner’s stated opinion that such a limitation added at this point in prosecution should be regarded as new matter, that amendment is not formally presented here. However, if the examiner concludes that the addition of such an amendment would serve to place the case in condition for allowance, it may be added.

Lastly, the issue of whether or not the examiner has properly combined the reference teachings was discussed. The examiner stated that, in his opinion, claim 1 did not sufficiently define the structure, i.e., order of layers, to support the argument. It was noted by the undersigned that the original claim language was more precise in this regard and, accordingly, the claim has been returned to its original wording which the examiner indicated he “could accept”. “Formed on the support in this order” must be interpreted to mean in the order in which the layers are mentioned. Thus, the first mentioned layer, the “protective layer” is first formed on the support and the “adhesive layer” is next formed on the support so that the laminate has a support-protective layer-adhesive layer order.

A petition for a two month extension of time has today been filed as a separate paper and a copy is attached hereto.

The substitute specification has been amended to correct a typographical error in the spelling of the conventional polymerization initiator mentioned in paragraph [0065].

The only remaining rejection at this point in prosecution is a rejection of all pending claims for obviousness over JP 63-132097 in view of Mori et al. This rejection is respectfully traversed for the following reasons:

1. The references are not properly combinable in the manner adopted by the examiner; and
2. Even if the references could be properly combined in the sense of use of the phosphazene compounds of Formula (I) of Mori et al in the pressure sensitive adhesive layer of Japanese '097, the result would not be suggestive of the invention as claimed because none of the phosphazene compounds of Mori et al or polymers derived therefrom would be a heat-reactive resin of a molecular weight of 50,000 - 2,000,000 (claim 1) or 100,000 - 1,000,000 (claim 13).

Here, the second argument is first explained.

2. Even if Mori et al and JP '097 were properly combinable in the manner suggested by the examiner, the modified adhesive layer would not be a heat-reactive resin having a molecular weight within the range of 50,000 - 2,000,000 (claim 1) or 100,000 - 1,000,000 (claim 13).

As the examiner correctly notes, at column 3, lines 10-32 Mori et al teach the use of 2-hydroxyethyl methacrylate and 2-hydroxy acrylate as reactants with a phosphazene compound with the resultant products containing substituted "X" and "Y" groups. However, the teachings at column 3 of Mori et al are quite clear to the effect that where such hydroxy acrylate monomers are reacted with the phosphazene, the reaction proceeds through removal of a hydrogen atom from a hydroxyl group (column 3, lines 12-15 and lines 22-24). Such a reaction, which forms a resin the examiner has previously characterized as applicants' "heat-reactive resin", is described by Mori et al as a "dehydrochlorination reaction." See column 3, lines 53-62 of Mori et al. The dehydrochlorination reaction proceeds through the hydroxy group with the result that the residues of the acrylate monomers form the X and Y substituents of the phosphazene compound of Formula (I) having "an unsaturated bond which is polymerized by heating or..." (See column 2, lines 55-61 and formula II at the top of column 3 of Mori et al.)

The foregoing is further illustrated in the working examples of Mori et al wherein the hexachlorocyclotriphosphazene was reacted with 2-hydroxyethyl methacrylate with liberation of hydrochloride to form a “curable phosphazene compound.” Note that the product of that reaction, i.e., 1,1,3,3,5,5-hexa(methacryloylethylenedioxy)-cyclotriphosphazane (column 8, lines 13 and 14), while it contains a double-bond curable group, self-evidently, is not a copolymer having a weight average molecular weight of at least 50,000. After that compound is polymerized by UV irradiation (column 8, lines 44-60) or by heating (column 2, lines 55-58), the polymerization proceeds through cleavage of the double bonds (column 2, lines 55-58) resulting in a polymer which no longer has pendent double bond groups or any other heat-reactive group.

Parenthetically, with regard to formula I of Mori et al, i.e., $[NP(X)_p(Y)_q]_n$, note the sum of p and q is 2 (column 2, line 53) and that the highest value for the integer “n” is 18 (column 3, line 39). Accordingly, the MW for formula I wherein “X” and “Y” are residues of, for example, the preferred 2-hydroxyethyl methacrylate (column 3, lines 31, 32), the MW would vary from 303 (n=1) to 5,454 (n=18). If “X” and “Y” were residues of 12-hydroxydodecyl acrylate (column 3, lines 30, 31) the molecular weight would vary from 555 (n=1) to 9,990 (n=18).

With regard to the teaching of use of an “oligomer” of dichlorophosphazene at column 4, lines 6, 7, note the definition of “oligomer” as “a polymer molecule consisting of only a few monomer units (dimer, trimer, tetramer)” in Hawley’s Condensed Chemical Dictionary (Attachment No. 4). Also see Condensed Chemical Dictionary by Rose et al (Attachment No. 5).

At the top of page 6 of the most recent office action the examiner also notes the disclosure at column 4, lines 57-60 of Mori et al which reads:

Polyurethane acrylates can be obtained, for example, by reacting an isocyanate compound such as tolylene diisocyanate with an acrylate having a pendant hydroxyl group.

It is the acrylate monomer reactant which is described as having the pendant hydroxyl group, not the polyurethane acrylate prepolymer obtained therefrom. Indeed, the acrylate must react through the pendant hydroxyl group (thereby eliminating same from the product) because the product (polyurethane acrylate) is described as an acrylate, i.e., as having intact acrylate groups. As evidence that the hydroxy acrylate reacts with the diisocyanate through its hydroxyl group, see the abstract of U.S. 4,480,079 (Attachment No. 6). Further, the polyurethane acrylate is described by Mori et al as a “prepolymer” (column 4, lines 29-34) and, as such, would not have a molecular weight as high as 50,000. See, for example, column 2, lines 44-46 and column 3, lines 11-15

of U.S. 4,608,400 (Attachment No. 7).

Summarizing, while Mori et al discloses phosphazene compounds of Formula (I) having heat-reactive unsaturated bonds (column 2, lines 55-61), upon polymerization of the compound of Formula (I) the resulting polymer contains no heat-reactive groups, i.e, no heat-reactive double-bond and no free hydroxyl group, the double-bonds having been cleaved in polymerization.

1. The references are not *prima facie* combinable in the manner adopted by the examiner.

Applicants do not deny that JP '097 and Mori et al "are directed to the same field of endeavor" as pointed out by the examiner at the top of page 5 of this most recent office action. However, the fact that the references are for the same field of endeavor is not a license to combine teachings absent some reason or motivation to do so. Stated differently, identity of field of endeavor does not permit any teaching to be properly combined with any other teaching in any manner conceivable.

Japanese '097 discloses a transfer sheet having a cured resin layer and an adhesive layer. The adhesive layer in the transfer sheet must be the outermost layer

when applied to the surface to which the cured resin layer is to be transferred. Thus, after transfer and removal of the release sheet, the cured resin layer becomes the outermost layer on the surface to which it was transferred. In this regard, the relative positions of the adhesive layer and cured layer as disclosed in Japanese '097 would be identical to the arrangement in any other transfer sheet including that claimed here. See, for example, the teaching of paragraph [0015] of applicants' Substitute Specification.

Thus, applicants' protective layer 31 must be positioned relative to the adhesive layer as defined by claim 1 so that, upon transfer, the protective layer becomes "the uppermost layer of the protective film after it is transferred to the image surface of a photomask" ([0026]). Otherwise, the protective layer cannot perform its intended function of protecting the substrate to which it is transferred. See paragraph [0002] of applicants' Substitute Specification. The teachings of Mori et al are in accord. At column 1, lines 34-37 Mori et al teach:

Generally, a protective film, for prevention of damage to the pattern and to impart durability, is used over the materials used for forming a pattern, such as a photo mask and lith film.

Thus, the teachings of Mori et al are directed to a protective film providing good "wear

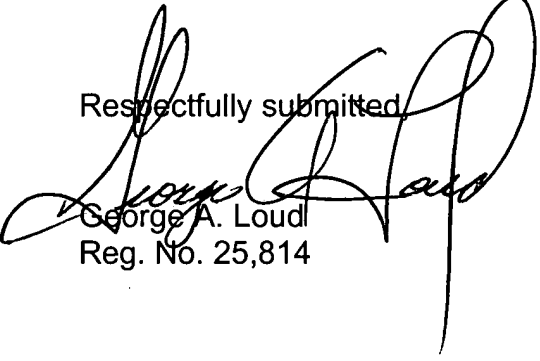
resistance” and “hardness” which are the criteria that Mori et al use in evaluation of their protective film products. See the tests for “wear resistance” and “pencil hardness” described in column 7 and the evaluations of the Mori et al products for same set forth in Tables 1-3.

Accordingly, it is respectfully submitted that while a legitimate argument might be made that it would have been obvious to incorporate the compounds disclosed by Mori et al into the “cured resin layer” of Japanese ‘097, it would have been nonsensical for one skilled in the art to incorporate components of the Mori et al film which are intended to provide high “wear resistance” and “hardness” into the adhesive layer of Japanese ‘097 which is not designed to provide either “wear resistance” or “hardness”, properties totally irrelevant to the only purpose and function of the adhesive layer of Japanese ‘097.

As the examiner has noted in the past, Japanese ‘097 teaches that the resin used as the curable adhesive layer can be the same as that used to form the “cured resin layer”. However, assuming that both layers of the transfer sheet of Japanese ‘097 contain an ionizing radiation curable resin, given the teachings of the references, it would have made sense only to add or substitute the compounds of Mori et al into that layer which would form the outermost layer after transfer to the surface to be protected.

Stated differently, the only logical application of the teachings of Mori et al to the transfer sheet of Japanese '097 would modify the cured resin layer located between the release sheet and the "curable adhesive layer." Such a modification would not lead to the present invention wherein the protective layer is laminated to the support and therefore located intermediate the support and the adhesive layer.

In conclusion, it is respectfully requested that the examiner reconsider the rejection of record with a view toward allowance of the claims as amended.

Respectfully submitted,

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